GAIN Working Group 1

Information Sharing Proof-of-Concept

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Third GAIN World Conference

November 3-5, 1998

Long Beach Hilton

Long Beach, California

Overview

- **WG1 Participants**
- **Goals**
- **Background**
- **Major Activities**
- **Sharing Library Concept**
- **Lessons Learned**
- **Sharing System Architecture**
- **Proposed Next Steps for WG1**
- **Conclusions**

Working Group 1 Participants

Abacus Technology Corporation
Aer Lingus
Airbus Industrie
Aircraft Engineers International
AlliedSignal
Aviation Research, Incorporated
Boeing Commercial Airplane Group
British Midland
Continental Airlines
DOT Volpe Systems Center
EUCARE
FAA
Flight Data Company
ICAO
Japan Airlines
Lockheed Martin Energy Systems
NASA
Oak Ridge National Laboratory
Pratt & Whitney
Rockwell Collins
The SABRE Group/AMR
Transport Canada

Goals

- Work the GAIN concept in microcosm
- Show what could be accomplished with limited information with a limited number of organizations involved
- Begin to identify and address problems of sharing information

Background

- Held eight meetings since last GAIN conference
  - Aer Lingus - Dublin
  - Airbus Industrie - Toulouse
  - America West Airlines - Phoenix
  - DOT Volpe Systems Center - Boston
  - FAA - Washington *(4 meetings)*
- Developed definitions for data and information
- Developed rules for sharing information within the Working Group

Major Activities

- Shared safety information on cross-section of safety issues (aircraft performance, flight ops, ATC, maintenance, dispatch, etc.)
  - Analyzed 4 event types: asymmetric thrust, tail strikes, air data events, and loading errors
- Focus changed from safety analysis to facilitation of information sharing
  - Interactive Airline Safety Information Sharing Library

Purpose of Sharing Library

- Demonstrate feasibility of organizing and disseminating *published* safety information from diverse sources:
  - Airlines
  - Airframe/Engine Manufacturers
  - Confidential reporting systems
  - Civil aviation authorities
  - Other aviation organizations

Library Characteristics

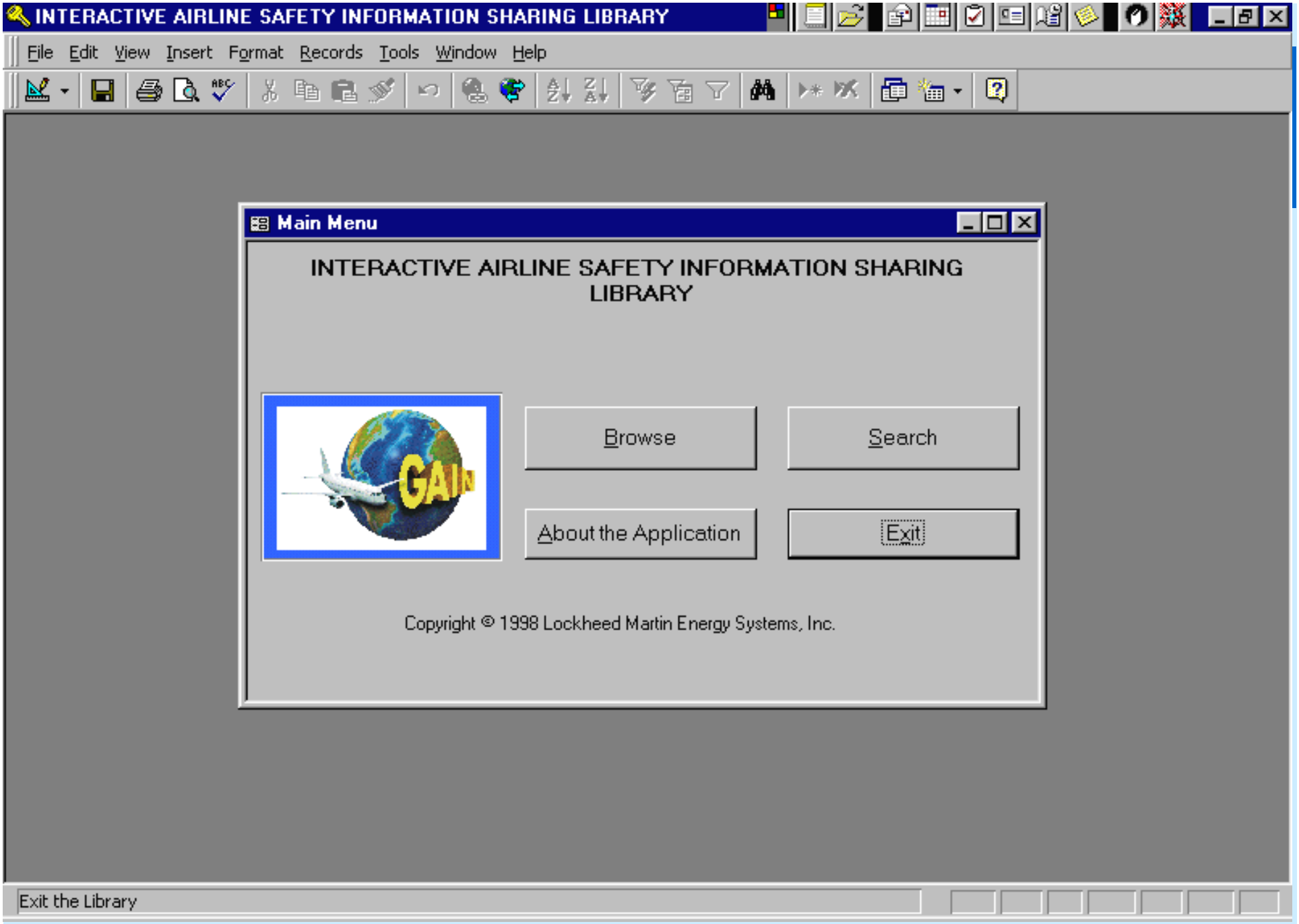
- For use by airline flight safety offices
- Published information on incidents
- De-identified information to protect airline, individuals
- No interpretation or analysis added

Library Information Processing

- Collection
  - Approval from 7 airlines and 8 other safety publication sources; 100+ articles selected
- De-identification
  - Identifying information removed (airlines, locations, names, dates)
- Coding
  - Aircraft make/model, phase of operation, ICAO ADREP 2000 incident/event type, detailed subject

Library Security

- "Stand alone" PC
- Physically secured
- Password-protected
- Limited access
- Contents to be erased
  by Dec. 31, 1998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File Edit View Insert Format Records Tools Window Help
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INTERACTIVE AIRLINE SAFETY INFORMATION SHARING LIBRARY
GAIN
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Search
About the Application
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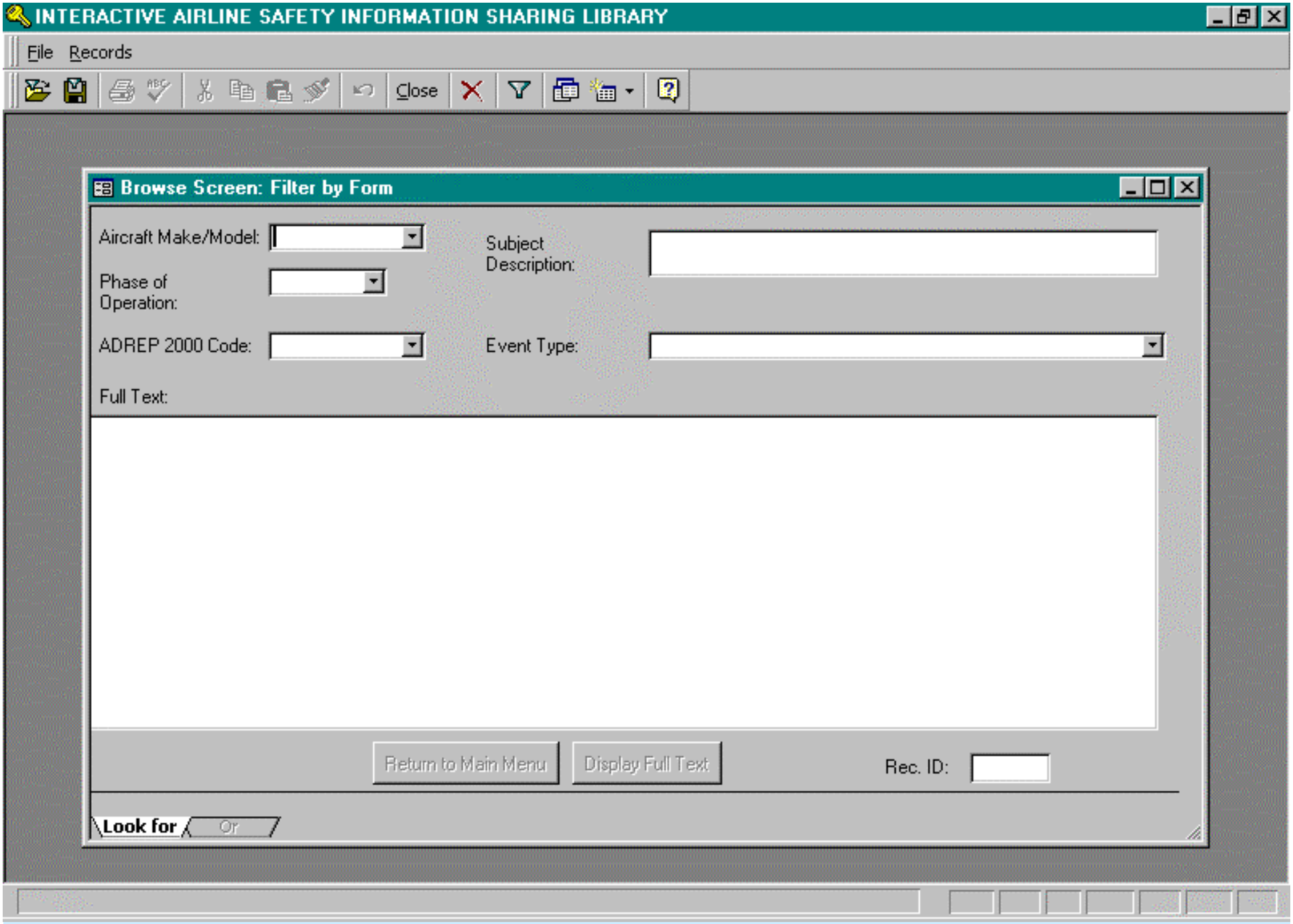
Copyright © 1998 Lockheed Martin Energy Systems, Inc.
Exit the Library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Records
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Aircraft Make/Model:
Subject Description:
Phase of Operation:
ADREP 2000 Code:
Event Type:
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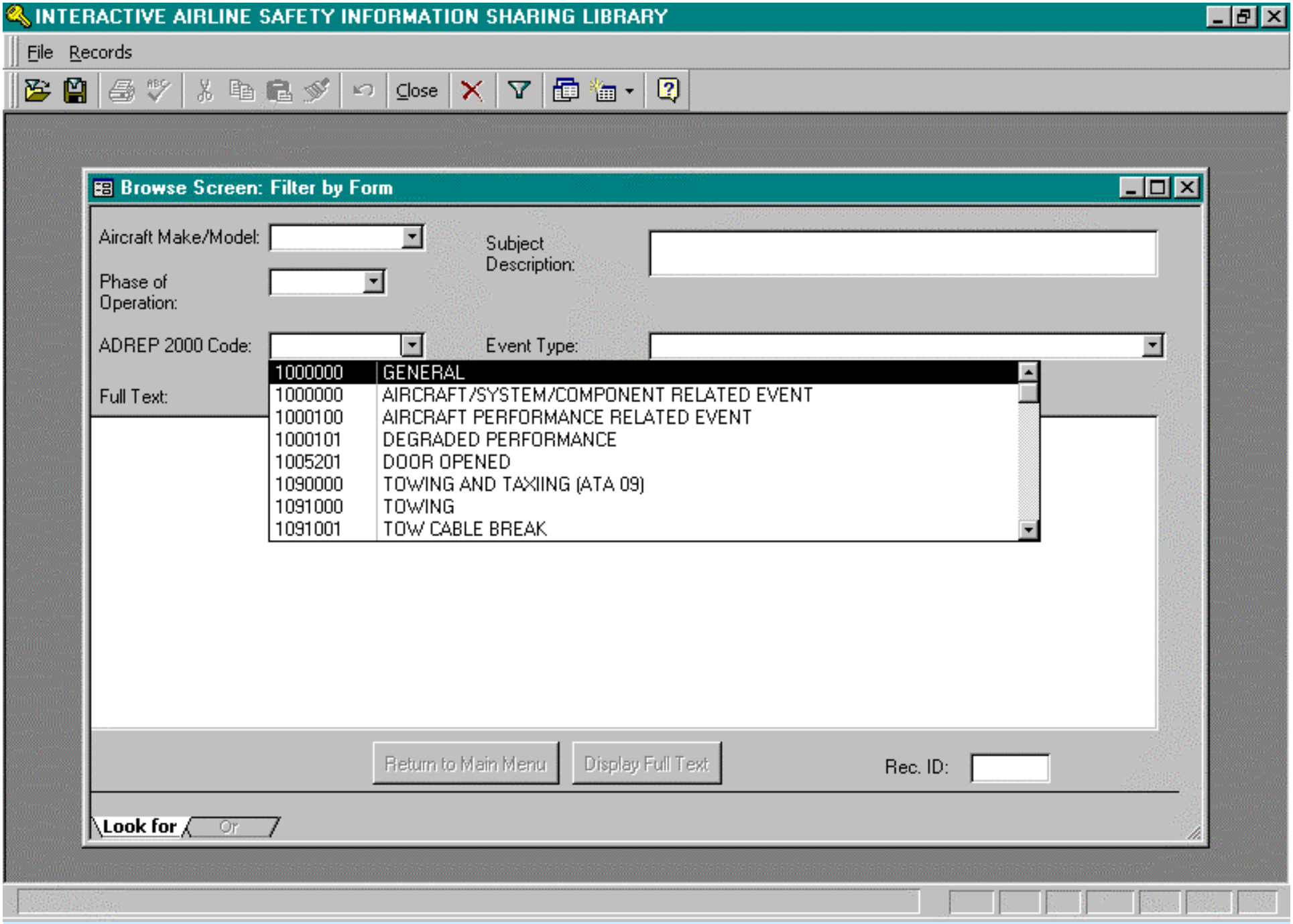
INTERACTIVE AIRLINE SAFETY INFORMATION SHARING LIBRARY
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Browse Screen: Filter by Form
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Subject Description:
Phase of Operation:
ADREP 2000 Code:
Event Type:
Full Text:
1000000 GENERAL
1000000 AIRCRAFT/SYSTEM/COMPONENT RELATED EVENT
1000100 AIRCRAFT PERFORMANCE RELATED EVENT
1000101 DEGRADED PERFORMANCE
1005201 DOOR OPENED
1090000 TOWING AND TAXIING (ATA 09)
1091000 TOWING
1091001 TOW CABLE BREAK
Return to Main Menu
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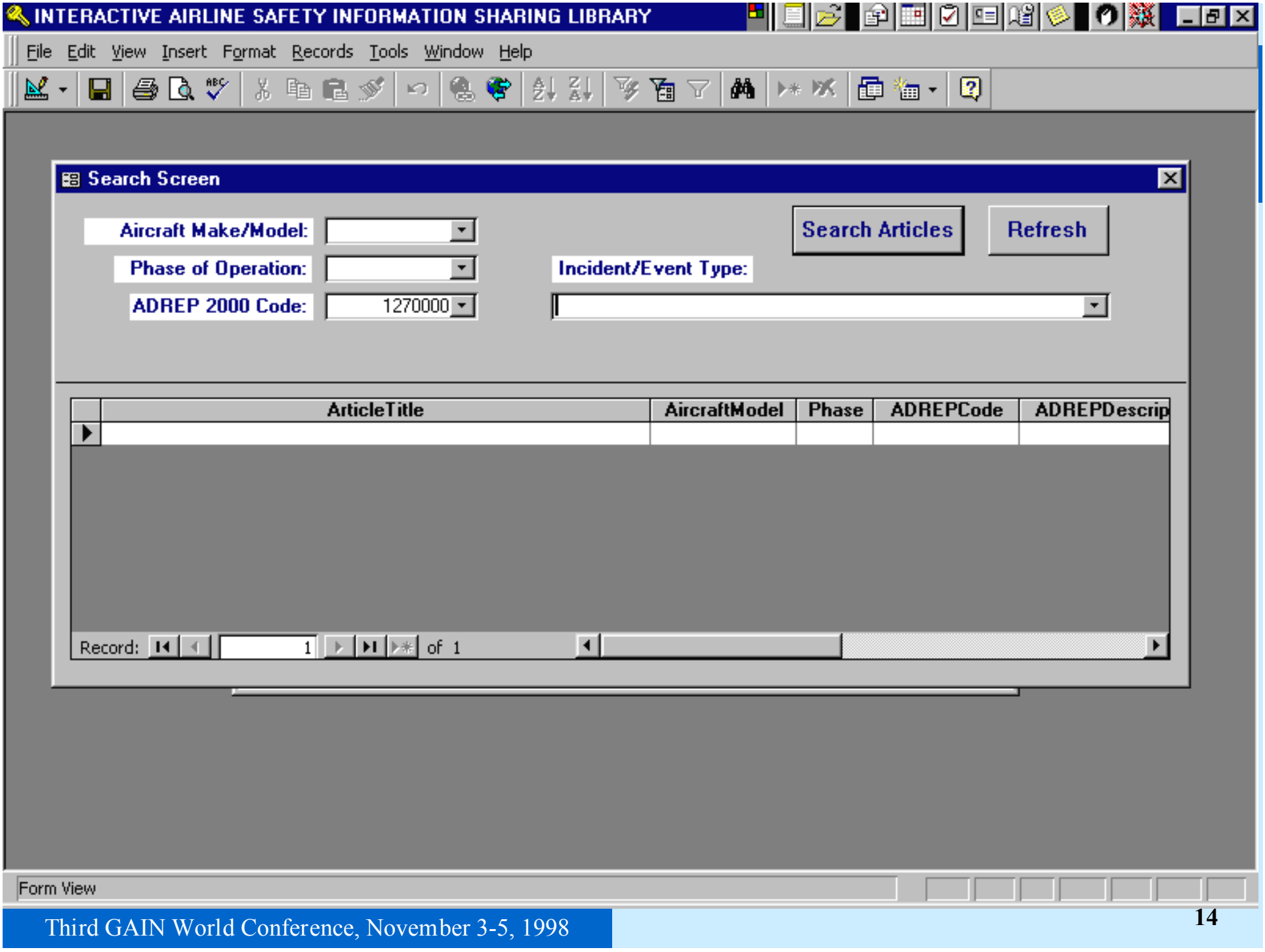
INTERACTIVE AIRLINE SAFETY INFORMATION SHARING LIBRARY
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Search Screen
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Phase of Operation:
ADREP 2000 Code:
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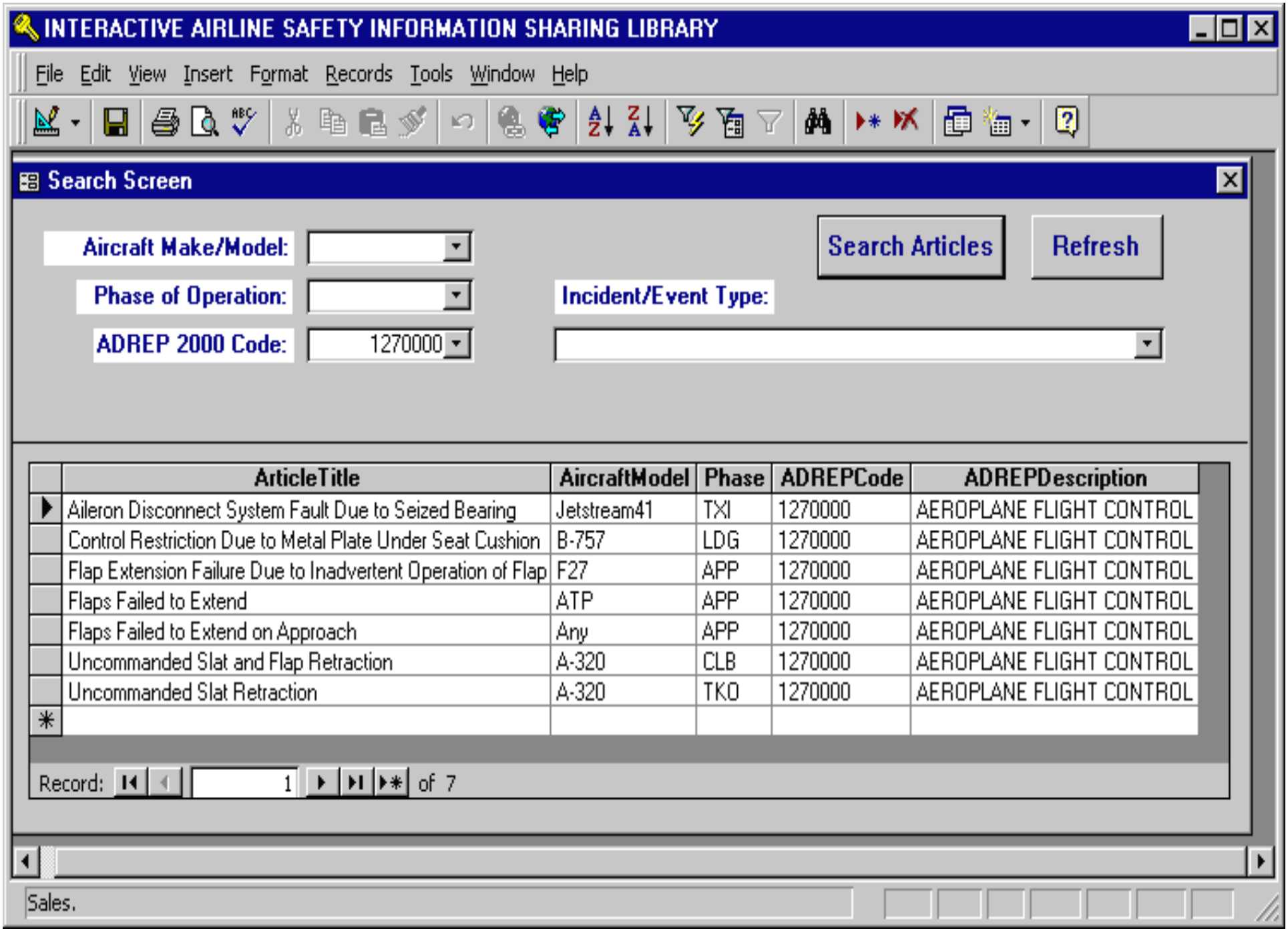
Form View


INTERACTIVE AIRLINE SAFETY INFORMATION SHARING LIBRARY
File Edit View Insert Format Records Tools Window Help
Search Screen
Aircraft Make/Model:
Phase of Operation:
ADREP 2000 Code:
1270000
Incident/Event Type:
Search Articles
Refresh
ArticleTitle | AircraftModel | Phase | ADREPCode | ADREPDescription
Aileron Disconnect System Fault Due to Seized Bearing | Jetstream41 | TXI | 1270000 | AEROPLANE FLIGHT CONTROL
Control Restriction Due to Metal Plate Under Seat Cushion | B-757 | LDG | 1270000 | AEROPLANE FLIGHT CONTROL
Flap Extension Failure Due to Inadvertent Operation of Flap | F27 | APP | 1270000 | AEROPLANE FLIGHT CONTROL
Flaps Failed to Extend | ATP | APP | 1270000 | AEROPLANE FLIGHT CONTROL
Flaps Failed to Extend on Approach | Any | APP | 1270000 | AEROPLANE FLIGHT CONTROL
Uncommanded Slat and Flap Retraction | A-320 | CLB | 1270000 | AEROPLANE FLIGHT CONTROL
Uncommanded Slat Retraction | A-320 | TKO | 1270000 | AEROPLANE FLIGHT CONTROL
Record: 1 of 7
Sales.

Lessons Learned for GAIN

- It is very difficult to share information on safety events outside an airline or manufacturer
- Sharing this information is possible only by:
  - Protecting the information
  - Ensuring proper use of the information
  - Sharing systems working together
  - Showing safety improvement

Protecting Information

- Information sharing agreements
- Available on “need to know” basis only
- Appropriate levels of communications security
- Sensitive information destroyed after review

Ensuring Proper Use of Information

- Information sharing agreements
- Level of sharing depends on user and “need to know”
- Minimum acceptable quality observed
- Terminology, taxonomies and formats standardized

Sharing Systems Working Together

- Information sharing agreements
- Standard electronic interface to link systems
- Flexible and multi-media sharing mechanisms
- Common interest in safety emphasized

Showing Safety Improvement

- Emphasis on safety improvements, not deficiencies
- Internal use of safety information and follow-up procedures expanded
- Feedback on safety improvements provided to external users of safety information

GAIN Conceptual Sharing System Architecture

INQUIRY

Standards Administrator

- Incident Record Standards
- Interchange Protocol Standard Definitions
- Security Administration
- Access Agreement Management

Safety Event Input

Approved Flight Safety Manager

- Secure PC
- Incident Record Handling Agreement
- Secure Network Access

Current Systems

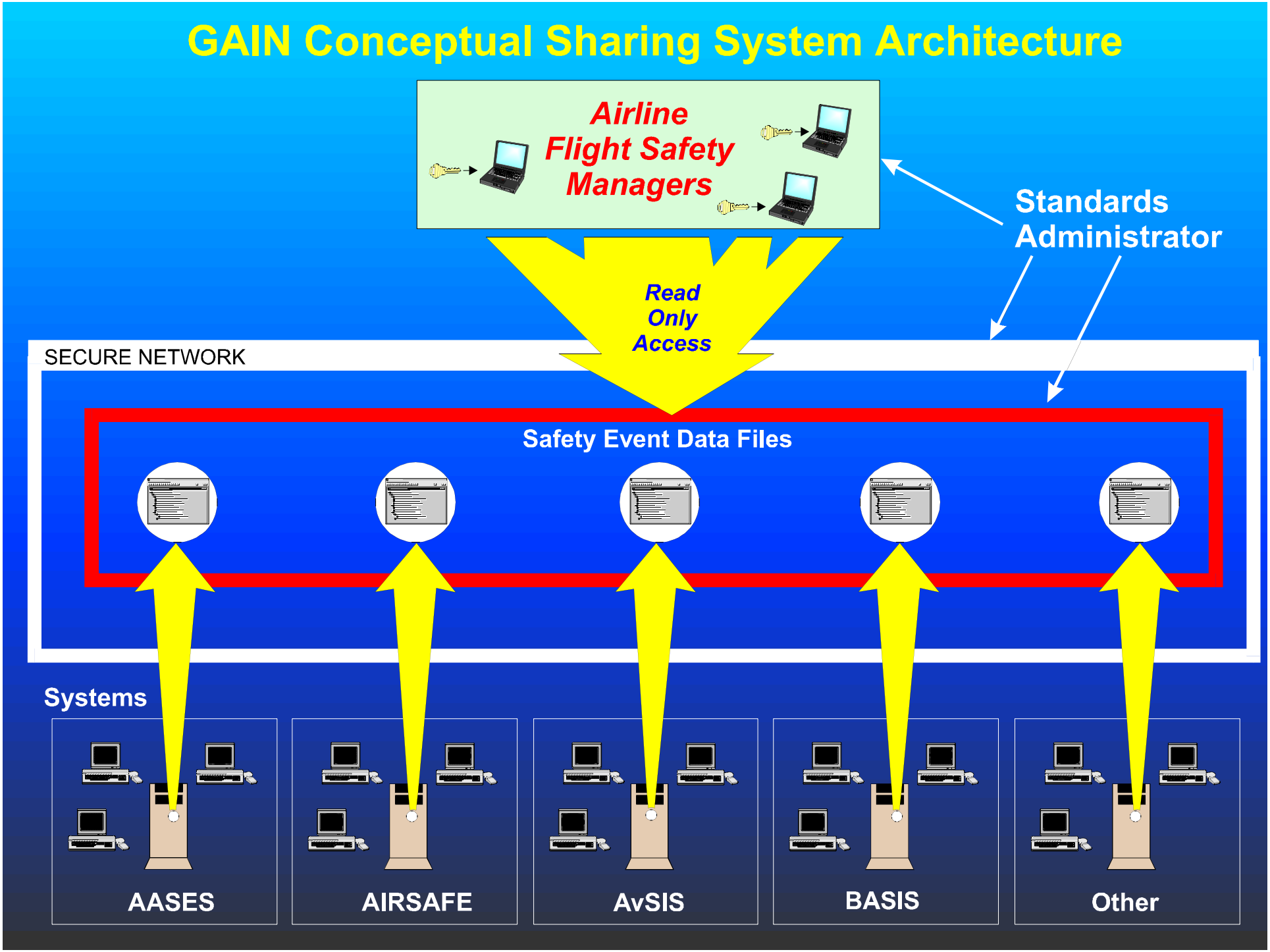
- Input to Safety Incident Files
- Approved Flt. Safety Manager Listing
- Record Handling Agreement
- Individual Users Agreement

Safety Event Data Files

EVENT

RECORDS

GAIN Conceptual Sharing System Architecture



Proposed Next Steps for WG1

- Modify WG1 charter to include facilitation of a prototype global airline information sharing network of systems
- Expand and diversify WG1 membership
- Determine level of interest in further development of sharing library. WG1 could:
  - Incorporate additional safety information
  - Add more functionality

Conclusions

- Trust at a personal level is a prerequisite to enable sharing of safety information.
- Sharing of information analyzed by the airline is an initial step towards building a global airline safety information sharing process.
- GAIN will enable airline safety reporting systems to share information in a secure manner by providing an infrastructure and maintaining operating standards.